

SOME TECHNIQUES FOR MINIMISING THE DIFFICULTIES IN EGG COUNTING IN *TRIBOLIUM CASTANEUM* (HERBST)

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The red flour beetle, *Tribolium castaneum* (Herbst) is one of the commonest laboratory insects. It is cosmopolitan and a major pest of several stored commodities.

Research workers often need to determine the intrinsic rate of increase of *T. castaneum*. This can be estimated if a life table and the fertility data are available. For stored products pests, an approximate value may be obtained if the developmental period and oviposition rate can be obtained experimentally and estimates made of adult and developmental mortality and sex-ratio (Howe, 1953). Unfortunately it is very difficult to get a good estimate of the oviposition rate of many stored products beetles including *T. castaneum*. *T. castaneum* lays eggs steadily over a long period, belonging to the second group of the four types of egg laying found in Coleoptera (Dick, 1937). There is much interference in any one group of beetles and because of density effects the oviposition rate is depressed. Alternatively isolated females may show a low oviposition rate because of need for further matings. If a male is placed permanently with the female then he may interfere with egg laying (Howe, 1962). A further complication is that adults frequently eat the newly laid eggs (Rich, 1956).

In the present paper some simple techniques are described which will minimise the difficulties in egg counting in *T. castaneum*.

Sexing the adult is difficult and depends on the presence or absence of a hair-lined pit on the interior face of the fore femur (Hinton, 1942). Although the method is excellent, unfortunately it requires minute microscopic observations and much time. Fortunately pupae are readily distinguished by microscopic examination of the exogenital processes of the female (Halstead, 1963). This method of sexing is easy and rapid, without any risk of injury. Sexed pupae are placed in separate 9 cm Petri dishes with a thin film of wholemeal flour in an incubator at 30°C. After emergence females are marked with a permanent white paint. White nail polish is excellent for this. Pairs of adults of different sexes are placed individually in 50 x 25 mm flat bottom glass tubes containing a mixture of wholemeal flour and yeast (19: 1) and covered at the top with cotton wool.

The preoviposition period in *T. castaneum* varies with temperature. It is 6.9 ± 0.1 , 4 ± 0 , and 3.9 ± 0.1 days at 25, 29, and 32°C respectively (Erdman, 1964, 1965). Before the onset of oviposition males are separated from females and are re-introduced for short periods for refertilization. Adults are easily separated by sieving the contents of the tubes through

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a sieve of 500 micrometre aperture. Eggs are obtained by passing the contents through a 60-mesh sieve.

These techniques save time and minimise both the interference with egg laying and the egg predation. These techniques may also be applied to many other stored products Coleoptera.

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AN EARLY USHER: *AGRIOPIS LEUCOPHAEARIA* D. & S. — On the 2nd January 1981 whilst walking through Park Wood, Hailsham in East Sussex I discovered an extremely early emergent of this species. — MARK HADLEY, Nature Conservancy Council, 19/20 Belgrave Square, London.

AN EXAMPLE OF INTERSPECIFIC COPULATION IN THE GENUS *CERYLON* LATRIELLE (COL.: CERYLONIDAE). — Whilst collecting on the edge of Burnt Ground Wood, near Hamptworth, Wiltshire (SU 222170), on May 31, 1974 I took a small testaceous *Cerylon* securely *in coitu* with a larger black example of the genus from beneath the bark of an oak log. Recent examination and dissection have confirmed my original supposition that the smaller specimen was a male *Cerylon ferrugineum* S. and the larger, dark specimen a female *C. histeroides* (F.).

It would be interesting to ascertain if the apparently few published references to interspecific copulation in Coleoptera is attributable to the true rarity of the occurrence of such couplings, or if it is because such events are observed infrequently and even then are not considered worthy of note. — DAVID RIDLEY NASH, 266 Colchester Road, Lawford, Essex, C011 2BU.